GNR 652 - Programming Assignment 3
Softmax Classifier
Indian Pines Hyperspectral Image

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Gradient descent has been used to find the values of hypothesis matrix θ.

50% of the samples (pixel values) corresponding to each class are collected in a datastructure and used to train the model and remaing 50% of the samples have been used for testing the accuracy of the trained model.

A vectorized equation corresponding to the below equation of gradient of the cost function has been used in gradient descent loop with 21000 iteration.

$$\nabla_{\theta_j} J(\theta) = -\frac{1}{m} \sum_{i=1}^{m} \left[x^{(i)} (1\{y^{(i)} = j\} - p(y^{(i)} = j | x^{(i)}; \theta)) \right] + \lambda \theta_j$$

Accuracy obtained is **83%** for the trained model.